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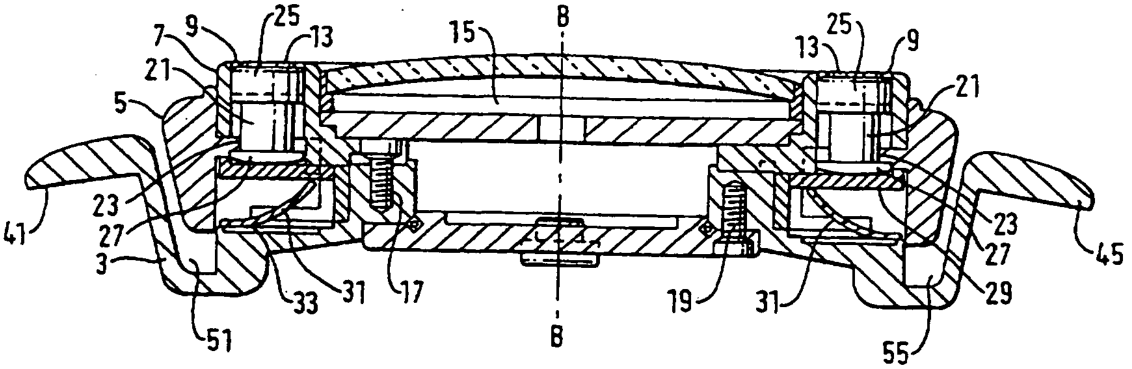

(57) Abstract

An article of jewellery includes a carriage member on which is arranged an array of gemstones, such as diamonds, rubies and/or sapphires, and a display member having one or more apertures. Relative movement between the carriage member and the display member results in different gemstones in the array being sequentially exposed through the or each aperture. The carriage member and the display member may be annular with the display member superposed in use above the carriage member and mounted on a common axis. The carriage member is preferably upwardly biassed such that selected gemstones are not only exposed through, but project above, the apertures in the display member. Depression and subsequent rotation of the carriage member brings a different set of gemstones into alignment with the apertures thereby changing the appearance of the article. In a preferred embodiment, the display member comprises a watch face and the display member comprises an annular disc or bezel concentric with and surrounding the watch face.

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ARTICLES OF JEWELLERY

The present invention relates to articles of jewellery, and in particular to a construction of such articles which permits the wearer of the jewellery to alter the outward appearance of the article.

Jewellery is regarded by many people, especially women, as an essential fashion accessory. While diamonds are considered "a girl's best friend", there are a number of other precious stones which can be regarded equally, if not more, beautiful than diamonds. Sapphires, rubies and emeralds are but a few of the coloured stones most frequently used in jewellery settings and they can be used either alone or in combination with each other, or as is more common, in combination with diamonds.

Of course, choosing a piece of jewellery incorporating a particular coloured stone or colour combination of stones means that the piece will not necessarily co-ordinate with all outfits in a person's wardrobe. Usually, this provides the person with the perfect excuse of having to purchase further jewellery which will match, rather than clash, with the latest outfit.

However, buying alternative pieces of jewellery because one piece is not suitable to wear with all outfits is an extremely expensive business. The cost can be increased further when the jewellery involved is a watch which includes a high precision watch movement. A perhaps more serious disadvantage of owning several sets of jewellery each incorporating different gemstones is that generally it is possible to wear only one item of a particular colour at any one time. So, unless the jewellery can be stored in a safe or other secure environment, unworn items are left around at home and are therefore vulnerable to thieves. It is a fact that jewellery is more likely to be stolen by burglary than in a personal attack on the wearer.

In an effort to satisfy the needs of women to own jewellery which will co-ordinate with a number of different coloured outfits, and to reduce the number of pieces of jewellery required to achieve this, the Applicants have been investigating ways in which alternative gemstones can be displayed in a single piece of jewellery such that only one or more selected gemstones are visible at any one time and the unselected gemstones remain hidden from view until selected.

FR-A-2700446 to Ratinaud discloses a piece of jewellery in the form of a ring incorporating a mechanism whereby a protruding first gemstone can be pressed downwards against a compression spring and then flipped over to expose a second gemstone mounted on the reverse of the first.

While Ratinaud makes it possible to change the appearance of a piece of jewellery to bring an alternative gemstone into view, in situations where it is desirable to change the appearance by switching several gemstones in a single piece of jewellery it would be necessary to incorporate one mechanism for each jewel pair. This makes manufacture more complicated and therefore more costly, and also it would require the wearer to change each gemstone individually which is inconvenient. A further disadvantage of Ratinaud is that the appearance of the jewellery can only be alternated between one of two settings.

Accordingly, it is an object of the present invention to provide a piece of jewellery whose appearance in terms of gemstones on display can be altered, yet which does not suffer from the disadvantages of the prior art.

From one aspect, the present invention consists in an article of jewellery comprising at least one carriage member having an outwardly directed face presenting an array of gemstones and at least one display member having one or more apertures, wherein the carriage member and the display member are moveable relative to each other sequentially to expose different gemstones in the array through the or each aperture.

By means of the invention, it is possible to choose which of the gemstones in the array is to be displayed at any given time. Thus, for example, the setting of the gemstones in the array may be such that in one position of the carriage member relative to the display member only one particular type of stone, rubies for instance, is visible through a plurality of the apertures. When the wearer wishes to change the appearance of the jewellery article, the display member is moved to another position relative to the carriage member so that a different type of stone becomes visible.

The arrangment of gemstones visible at any one time is, of course, governed by the number and position of the apertures in the display member and the location of the gemstones on the carriage member.

A further advantage offered by the present invention is that it is necessary to move only one or both of the carriage member and display member in order to change the gemstone display; there is no need to make an adjustment for each and every gemstone. For simplicity of manufacture and use, only one of the display member and carriage member need be moveable and, of the two, it is preferred for the carriage member to be moveable and the display member fixed. Such an arrangement makes it less likely for the display of gemstones to be accidentally altered.

In a preferred embodiment, the display member is superposed in use above the outwardly directed face of the carriage member and the contours of each member follow similar lines. For example, when the gemstones are displayed on a watch face, the outwardly directed face of the carriage member and display member may be substantially flat. For example, the display member may comprise the watch face itself or, more preferably, may comprise an annular disc or bezel concentric with and surrounding the watch face.

On the other hand, when the article of jewellery is in the form of a bracelet, with the gems to be exposed on the outer circumferential edge of the bracelet, the display member will usually comprise a band formed into a ring with the or each aperture extending radially through the ring, and the carriage member will be of complementary shape and of smaller radius carrying the or each gemstone on its exterior circumferential face and mounted concentrically with the display member.

In order to provide a neat appearance and to avoid dirt or other extraneous matter accumulating between the carriage member and display member, it is useful to provide overlapping means between the two members, at least where they are exposed on the exterior of the article of jewellery. In this regard, the display member is preferably substantially U-shaped in cross-section, for example, in the form of a channel member and the carriage member includes at least one side wall for overlapping with at least one leg of the U-shaped display member. When the article of jewellery comprises a watch, the display member and carriage member may overlap to provide the watch casing.

Advantageously, the display member and carriage member are mounted on a common axis such that rotation of one member relative to the other about the axis brings sequential gemstones in the array into alignment with the or each aperture.

In one preferred embodiment, both the display member and the carriage member comprise annular members making them particularly suitable for surrounding a watch mechanism. Apertures may be provided at regular intervals in a substantially circular arrangement on the display member, and the carriage member may be provided at more frequent intervals with a plurality of gemstones in a corresponding circular array. The spacing between apertures represents a multiple of the spacing between gemstones in the array. Angular movement of the carriage member relative to the display member will therefore result in sequential gemstones being exposed through the apertures.

The gemstones themselves may be supported directly on the outwardly directed surface of the carriage member, but more preferably are mounted in socket means which are integral with or retained by the carriage member. The provision of such socket means allows for a more secure fixing of the gemstones.

In order that their beauty can be more fully appreciated, it is desirable that the gemstones on view protrude into or, more preferably project above, their respective apertures. However, when the gemstones are so positioned, relative movement between the display member and carriage member may be obstructed.

Accordingly, the present invention preferably includes means for projecting those gemstones selected for exposure through the or each aperture from a lower position where said gemstones lie below a bottom surface in use of the display member to an upper position where the gemstones project through the or each aperture to lie above an upper surface in use of the display member.

When it is desired to expose a different set of gemstones, the projection means can be disengaged to allow the stones currently displayed to "drop" to their lower position below the bottom surface of the display member. At this stage, all gemstones in the array are spaced from the display member, and the carriage member is able to move or rotate freely without the gemstones hindering the movement by catching against the display member. Once in the new position with different gemstones aligned with the or each aperture, the means for projection can be re-engaged to project the "new" set of gemstones into the apertures for exposure through the display member.

Expressed in another way, the invention resides in an article of jewellery, said article comprising at least one upwardly biassed carriage member having an outwardly directed face presenting an array of gemstones and at least one display member superposed in use above the carriage member and provided with one or more apertures through which one or more gemstones in said array project, wherein said carriage member is capable of being depressed and rotated relative to the display member to allow one or more different gemstones to be projected through said one or more apertures.

Depression of the aforementioned carriage member may be achieved either directly or indirectly. For example, where the carriage member forms part of the jewellery casing, the wearer can manually push down directly on the carriage member and then twist the same to bring a different set of gemstones into alignment with the apertures. Since the carriage member is upwardly biassed, release of the carriage member carrying the gemstones results in the different set of gemstones being exposed through the or each aperture of the display member.

In order to be able selectively to project only those gemstones which are to be exposed through the apertures in the display member, each aperture may be associated with the projection means, with the carriage member supporting the gemstones interposed between the or each aperture and the projection means.

To facilitate projection of only those gemstones which are to be exposed, each gemstone may be moveably mounted on the carriage member such that each gemstone can be either independently projected or projected in conjunction with other gemstones which together correspond to the aperture pattern of the display member.

Alternatively, the entire array of gemstones may be projected, that is, both those gemstones which are in alignment with the apertures and those gemstones which are not in alignment with the apertures.

As will be appreciated, those gemstones which are not being exposed or "projected" for the time being are retained below the bottom surface in use of the display member.

In order to accommodate those gemstones which are projected yet not aligned with the apertures, the display member may be provided at least on its underside with one or more recesses into which the non-exposed gemstones may protrude. On the other hand, since many types of gemstones used in articles of jewellery are difficult, if not virtually impossible, to scratch, there is generally no need for any special provision to accommodate those gemstones which are projected but not aligned.

Preferably, each gemstone is mounted on a column extending through a corresponding orifice in the carriage member. In order that the aforementioned columns are retained by the carriage member, and to limit any movement of the columns in relation to the orifice, each column is preferably provided at or adjacent opposite ends with collar means of diameter greater than the diameter of the corresponding orifice.

The means for projecting may comprise spring means. More particularly, the means for projecting comprises at least one support plate for supporting the carriage member and spring means for urging said at least one support plate against the carriage member thereby to project the carriage member and hence the gemstones to their uppermost position. By such means, the carriage member may be resiliently biassed upwards towards the display member.

In one form, the spring means comprises a plurality of spring elements substantially regularly spaced below said support plate to apply upward pressure evenly across the support plate. For example, the spring means is conveniently provided in the form of a sheet, more preferably an annulus, having a plurality of spring elements extending therefrom. Such spring elements may be separately formed from, and attached to, the sheet. More conveniently, however, the spring means is formed of a continuous strip or annulus of resilient material having a series of cut-out tongues which are bent out of the plane of the strip or annulus to provide resilient projections and act as spring elements.

The spring means is advantageously seated on or affixed to a base member which may in addition serve as a mounting for the display member. The display member is preferably fixed, such as by screws or the like, to the base member with the carriage member being free to move such as by rotation relative to both the display member and the base member.

When it is desired to alter the appearance of the article of jewellery by changing the gemstones exposed, depression of the support plate against the spring means, allows the exposed gemstones to drop below the level of the display member and enables the carriage means to be rotated or otherwise moved to bring a different set of gemstone-carrying columns into alignment with the apertures on the display member. By subsequently releasing the downward pressure on the support plate, the resilient biassing means acts to raise the support plate and hence the new columns now aligned with the apertures to provide a different display of gemstones.

By virtue of the carriage member being upwardly biassed to project the gemstones into the apertures of the display member, the carriage member is in effect self-locking with the display member. Thus there is no need to provide additional means to lock the carriage member in its selected position with respect to the display member.

In order that the invention may be more readily understood, one embodiment in accordance therewith will now be described my way of example with reference to the accompanying drawings, in which:-

Fig. 1 is a side elevation of a watch in accordance with the invention;

Fig. 2 is a plan view from above of the watch of Fig.1;

Fig. 3 is a cross-sectional view of the watch along line A-A of Fig. 2;

Fig. 4 is a side elevation of the display member shown in Fig. 3;

Fig. 5 is a plan view from above of the display member of Fig. 4;

Fig. 6 is a plan view from below of the display member of Fig. 4;

Fig. 7 is a side elevation of the carriage member shown in Fig. 3;

Fig. 8 is a plan view from above of the carriage member of Fig. 7;

Fig. 9 is a plan view from below of the carriage member of Fig. 7;

Fig. 10 is a side elevation of the support plate shown in Fig. 3;

Fig. 11 is a side elevation of the spring means shown in Fig. 3;

Fig. 12 is a plan view from above of the support plate shown in Fig. 10;

Fig. 13 is a plan view from above of the spring means shown in Fig. 11;

Fig. 14 is a side elevation of the base member shown in Fig. 3;

Fig. 15 is a plan view from above of the base member of Fig. 14; and

Fig. 16 is a plan view from below of the base member of Fig. 14.

Referring firstly to Figures 1 and 2, a watch 1 is comprised of a base member 3, carriage member 5 and display member 7. The display member 7 is provided with a plurality of apertures 9 through which gemstones 13 carried on the carriage member project. The display member 7 and carriage member 5 comprise annular discs concentric with and surrounding the watch face 15.

A cross-sectional view along line A-A of Figure 2 is provided by Figure 3. As will be apparent, display member 7 is fixed to base member 3 by means of screws 17, 19. Gemstones 13 are mounted on columns 21 extending through orifices 23 in the carriage member 5. In order to retain the columns 21 on the carriage member 5, each column 21 is provided with collar means 25, 27.

The collar means 27 provided at the lower end in use of the columns 21 and the carriage member 5 itself are supported by plate 29 which in turn is supported and biassed upwards by resilient tongue members 31 projecting from annulus 33. Annulus 33 is seated on base member 3.

The number of gemstones 13 carried on the member 5 is a multiple of the number of apertures 9 in the display member. In the illustrated embodiment, three different types of gemstones may be accommodated. For example, the carriage member may have an array of diamonds, rubies and emeralds alternately mounted on the columns 21. At any one time, only one type of gemstone is displayed through the apertures 9.

To change the appearance of the watch 1, for example, by displaying all rubies instead of all diamonds, carriage member 5 and hence the support plate 29 can be pushed down against the upward force of the tongue members 31 so that the diamonds are retracted from the apertures 9. The carriage member 5 is then ready for rotation about axis B-B to bring a set of rubies into alignment with the apertures 9. Upon release of the carriage member 5, the resilience of tongue members 31 cause the support plate 29 and the carriage member 5 to spring upwards so projecting the new set of stones into the apertures 9.

Once in the "rest" position with a set of gemstones projecting through the apertures 9, the mechanism is effectively locked against further movement. Repetition of the operation described above will result in a third set of gemstones, emeralds for example, being displayed through the apertures.

For ease of understanding, Figures 4 to 16 show each of the individual components illustrated in Figure 3 and described above. Thus Figures 4 to 6 show various views of the display member 7 with apertures 9 regularly spaced in a circular arrangement; Figures 7 to 9 show views of the carriage member 5 which from above and from below reveals a circular arrangement of orifices 23 each for receiving columns 21 shown in Figure 3. Figures 10 and 12 illustrate the support plate 29 which consists of an ring 35 provided with a plurality of radial seat portions 37 which act to support at least those columns 21 which are in alignment with the apertures 9. Figures 11 and 13 show the spring means in the form of an annulus 33 with resilient, integral tongue members 31 projecting therefrom. Finally, Figures 14 to 16 illustrate views of the base member 3 onto which the display member 7 can be secured. The base member is provided with wings 41, 45 which provide appropriate fixing points for the watch straps (not shown). The base member is also provided with recesses 51, 55 into which the carriage member 5 is pushed during operation of the "changeover" mechanism and the walls of the recesses 51, 55 act as bearing surfaces to limit the distance by which the carriage member 5 can be depressed.

While particular embodiments have been described, it should be appreciated that various modifications may be made without departing from the scope of the invention. For example, references to gemstones should be interpreted as including both precious and non-precious stones, artificial and synthetic stones, or indeed any such decorative items that may be displayed on articles of jewellery.

CLAIMS

1. An article of jewellery comprising at least one carriage member having an outwardly directed face presenting an array of gemstones and at least one display member having one or more apertures, wherein the carriage member and the display member are moveable relative to each other sequentially to expose different gemstones in the array through the or each aperture.

2. An article of jewellery according to claim 1, wherein the carriage member is moveable and the display member is fixed.

3. An article of jewellery according to claim 1 or claim 2, wherein the display member is superposed in use above the outwardly directed face of the carriage member.

4. An article of jewellery according to any preceding claim, wherein the carriage member and the display member are mounted on a common axis such that rotation of one member relative to the other about the axis brings sequential gemstones in the array into alignment with the or each aperture.

5. An article of jewellery according to claim 5, wherein the carriage member and the display member comprise annular members.

6. An article of jewellery according to claim 5, wherein a plurality of apertures are provided at regular intervals in a substantially circular arrangement on the display member and the carriage member is provided at more frequent intervals with a plurality of gemstones in a corresponding circular array with the spacing between the apertures being a multiple of the spacing between the gemstones in the array such that rotation of the carriage member relative to the display member results in sequential gemstones being exposed through the apertures.

7. An article of jewellery according to any preceding claim, wherein the gemstones are mounted in socket means integral with or retained by the carriage member.

8. An article of jewellery according to any preceding claim, further comprising means for projecting those gemstones selected for exposure through the or each aperture from a lower position where said gemstones lie below a bottom surface in use of the display member to an upper position where the gemstones project through the or each aperture to lie above an upper surface in use of the display member.

9. An article of jewellery according to claim 8, wherein the carriage member is upwardly biassed thereby to project the gemstones and adapted to be depressed against the upward bias to permit movement of the carriage member relative to the display member.

10. An article of jewellery according to claim 8 or claim 9, wherein the projection means comprises spring means.

11. An article of jewellery according to any preceding claim, wherein overlapping means are provided between the carriage member and the display member.

12. An article of jewellery according to any preceding claim in the form of a watch.

13. An article of jewellery according claim 12, wherein the display member comprises comprises the watch face.

14. An article of jewellery according to claim 13, wherein the display member comprises an annular disc or bezel concentric with and surrounding the watch face.

15. An article of jewellery substantially as hereinbefore described with reference to the accompanying drawings.

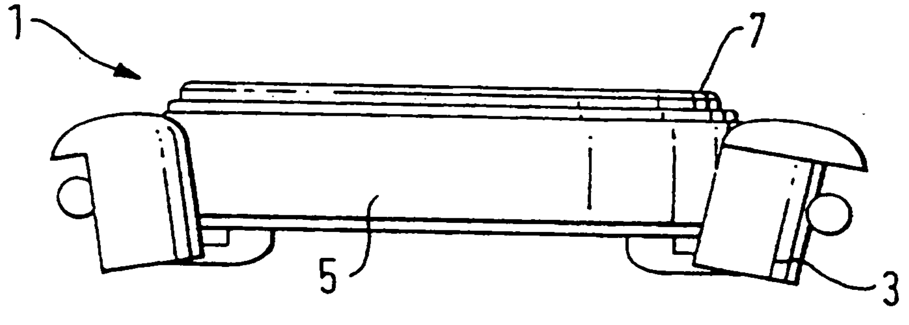


FIG. 1

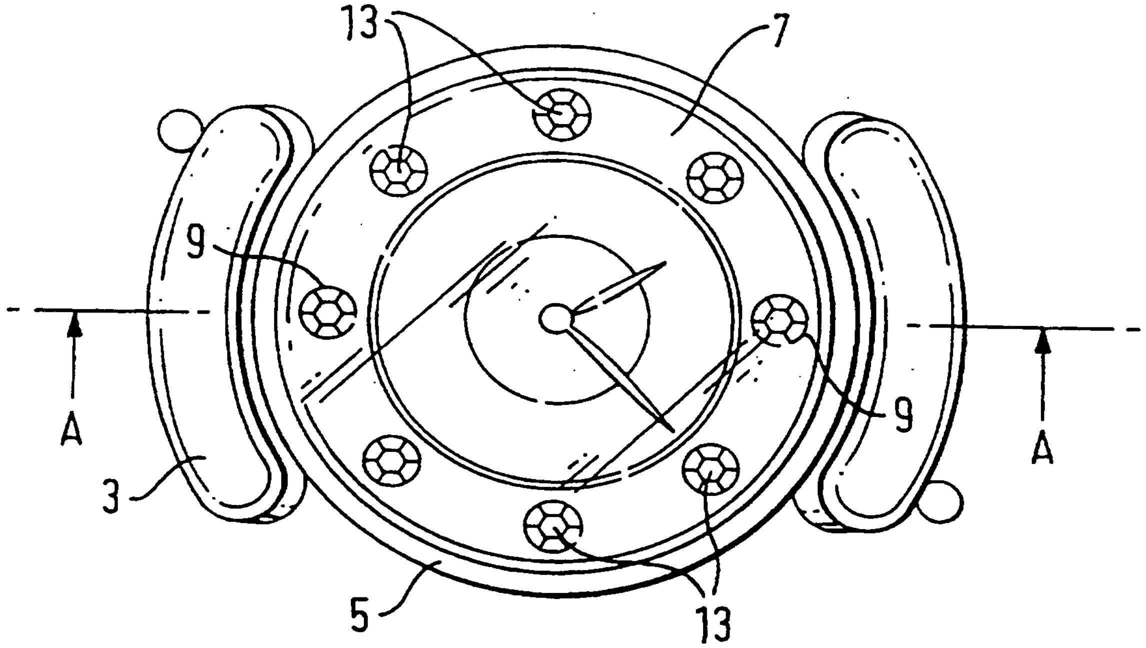


FIG. 2

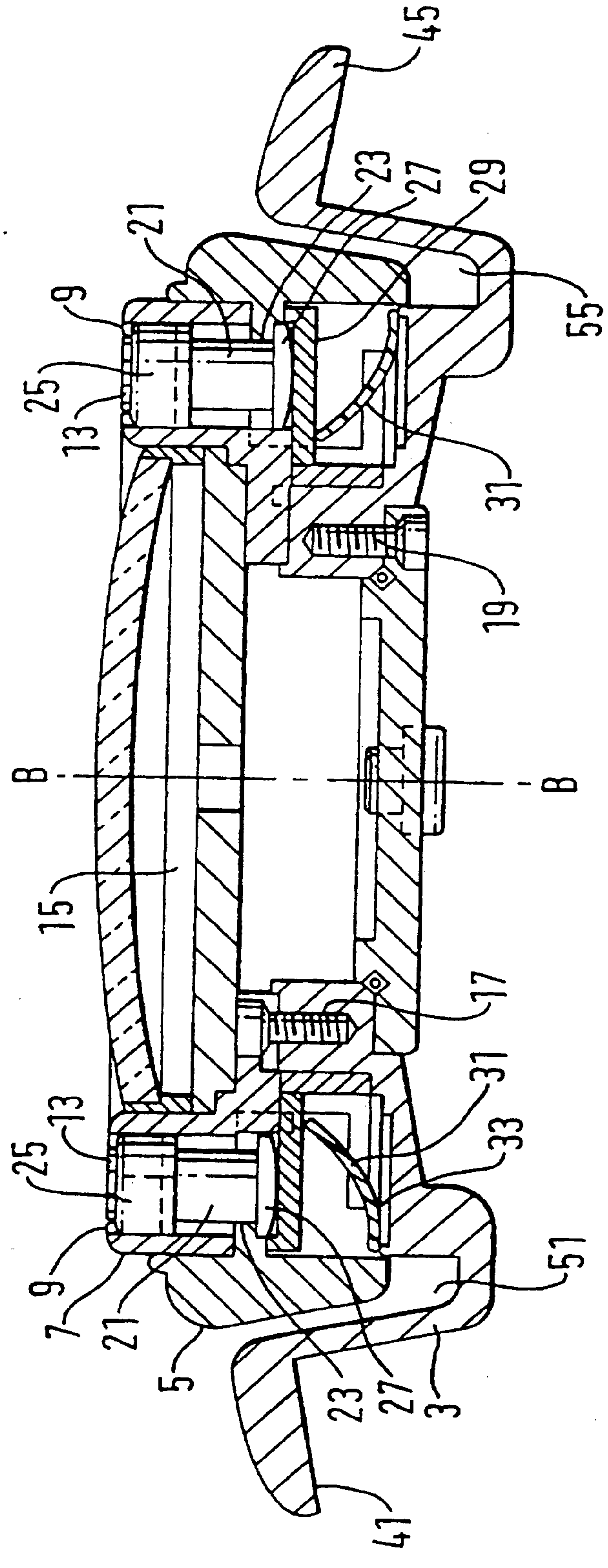


FIG. 3

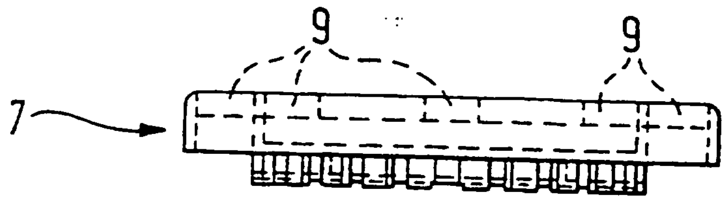


FIG. 4

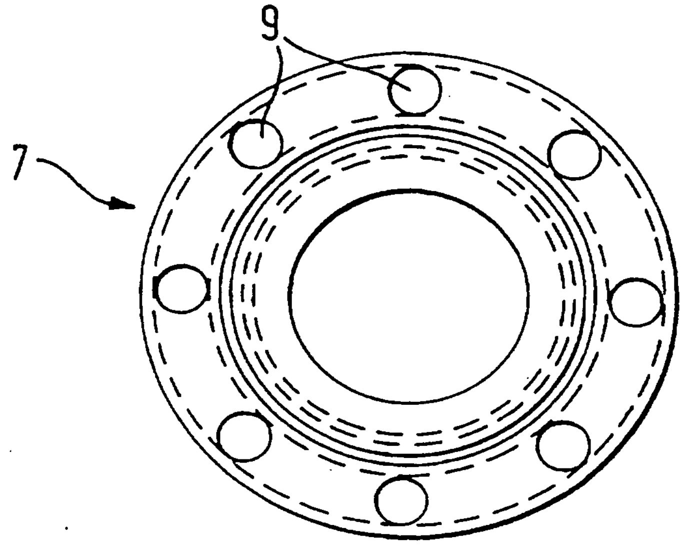


FIG. 5

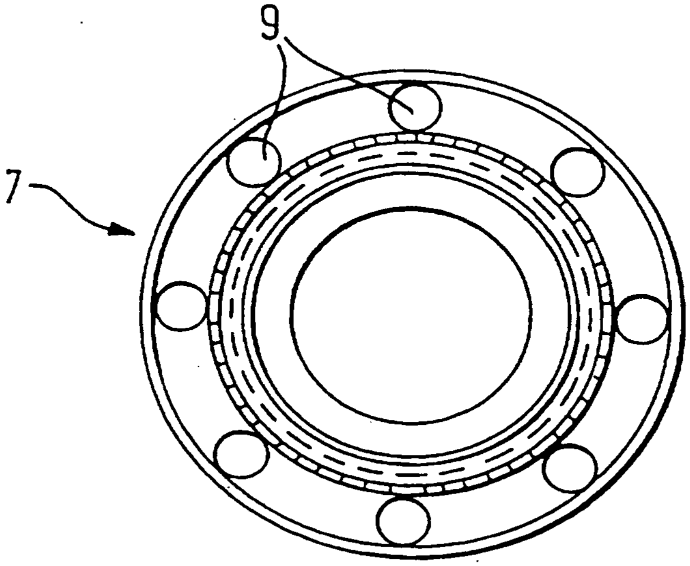


FIG. 6

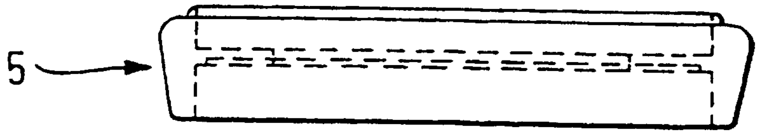


FIG. 7

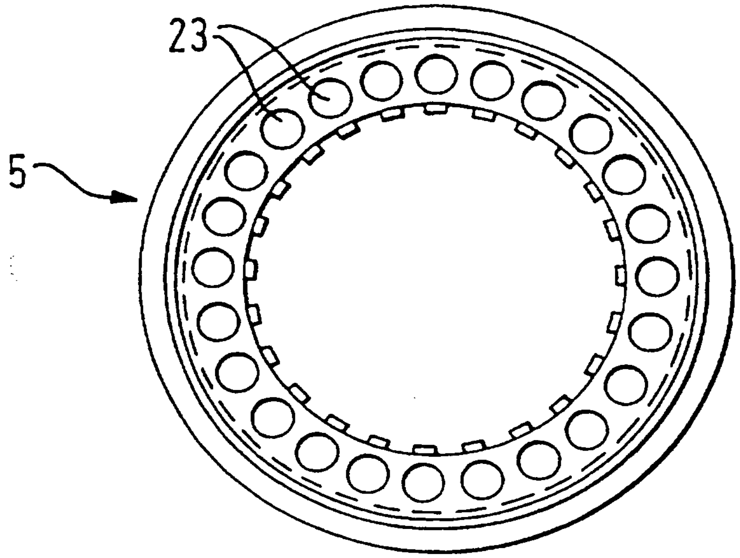


FIG. 8

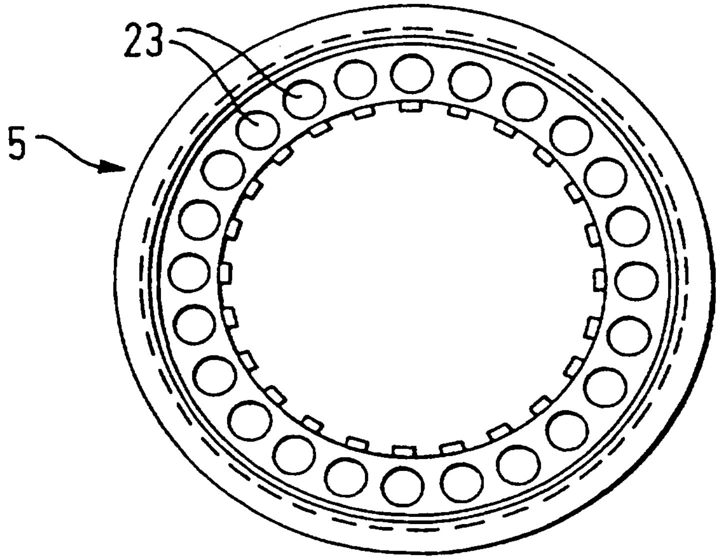


FIG. 9

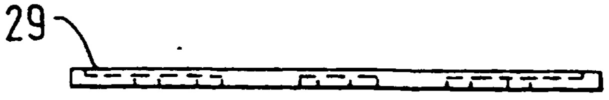


FIG. 10

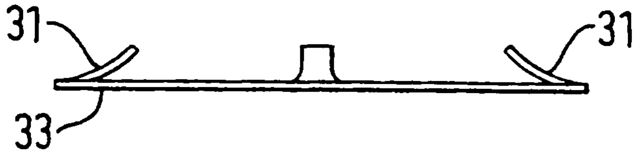


FIG. 11

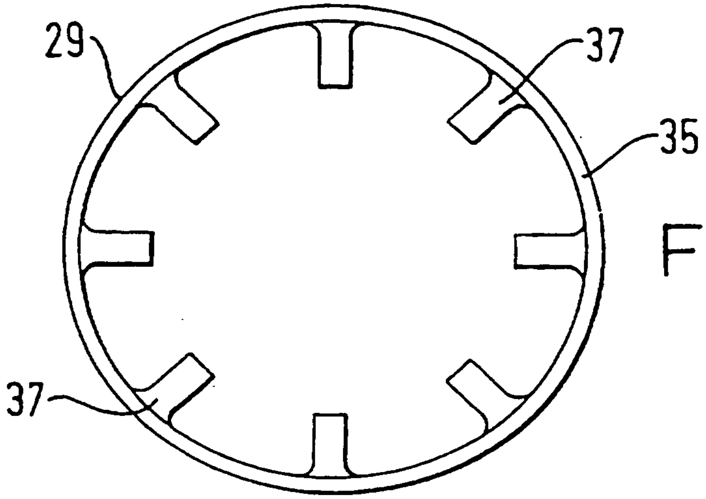


FIG. 12

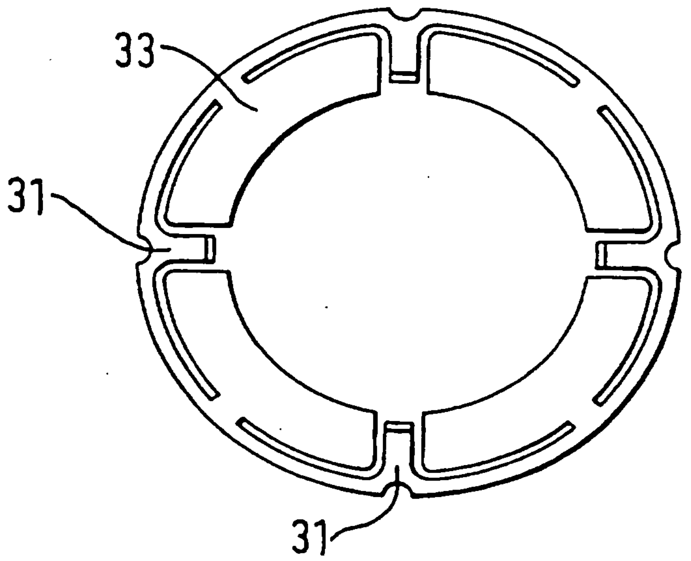


FIG. 13

FIG. 14

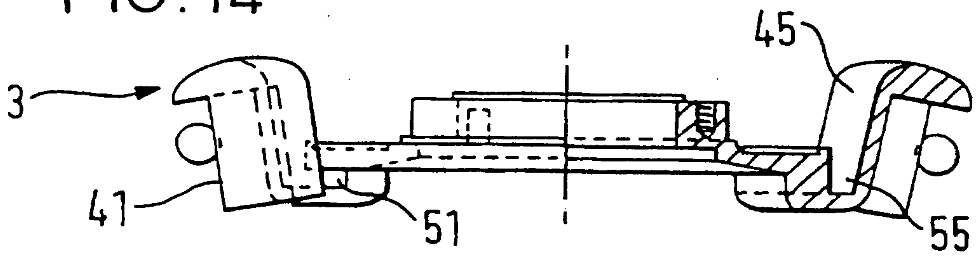


FIG. 15

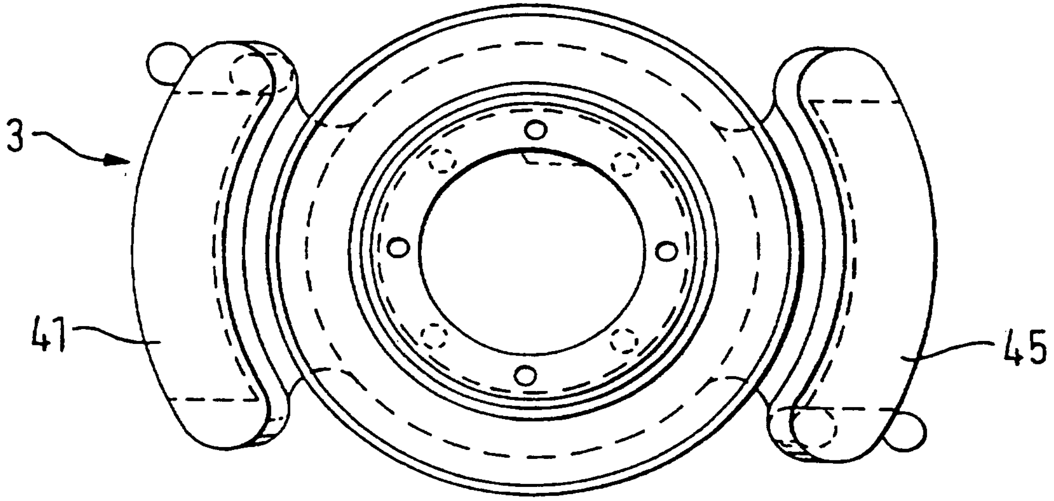
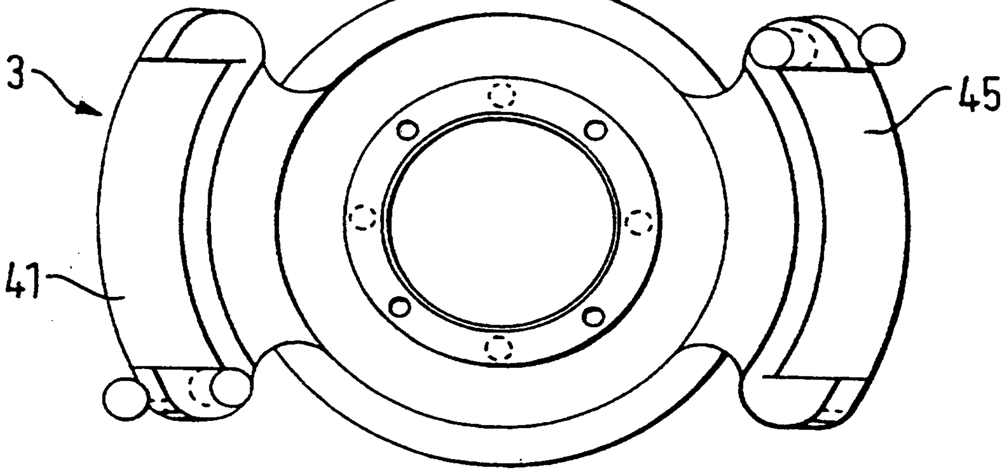


FIG. 16



INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 97/00725

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G04B47/04 A44C9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G04B A44C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 18 558 E (THOME) 18 May 1914 see the whole document ---	1,2,4,5, 7,15
X	US 2 453 955 A (YOUNGHUSBAND) 16 November 1948 see the whole document ---	1,2,4,5, 7,15
X	FR 2 693 880 A (VOELTZEL) 28 January 1994 see page 5, line 6 - page 7, line 6; figures 5-13 ---	1,2,4-7, 15
Y	CH 666 380 A (SARCAR S.A.) 29 July 1988 see page 3, right-hand column, line 18 - line 52; figures ---	1,6, 12-15
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search 15 July 1997	Date of mailing of the international search report 25. 07. 97
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Authorized officer Pineau, A

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 97/00725

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CH 684 814 A (JOLIDON) 13 January 1995 see abstract; figure 1 ---	1,6, 12-15
A	CH 670 186 A (SARCAR S.A.) 31 May 1989 see page 3, right-hand column, line 18 - line 51; figures -----	1-5,7, 12-15

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. ..onal Application No
PCT/GB 97/00725

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 18558 E		NONE	
US 2453955 A	16-11-48	NONE	
FR 2693880 A	28-01-94	NONE	
CH 666380 A	29-07-88	NONE	
CH 684814 A	13-01-95	NONE	
CH 670186 A	31-05-89	NONE	